# ELEMENTARY COMPUTATION

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A self-instructional program
using the APH Student Speech Plus Calculator

by

Tuck Tinsley III, Anthony Evancic,
and Bob Glass

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# FOREWORD

This publication is the result of a request from the field for practice materials for visually handicapped students at the elementary grade level who use the APH Student Speech Plus Calculator. Participants representing general and special education, teacher education, industry, the California Clearinghouse Depository for Handicapped Students, and the American Printing House for the Blind (APH) met in San Francisco in November 1977 to explore types of materials needed by blind students for understanding calculator applications. Immediate needs for materials recommended by participants included a minimum of three sets of materials:

1. Materials to introduce the APH calculator to primary-elementary grade visually handicapped students
2. Workbook practice materials which focus on computation for elementary grade students
3. More advanced materials which emphasize problem solving for upper elementary, junior high, and secondary students

These recommendations were supported by participants in a National Needs Meeting in Mathematics for Blind Students held in Louisville in July 1979.

The APH published Computation and Problem Solving for Young Adults in 1978, co-authored by Lamon, Tinsley, and Evancic. The manual is for secondary and vocational students. It is self-instructional with content and presentation suitable for students as early as junior high school. It focuses on computation and problem solving and contains many problems related to daily living and real life experiences.

Two subsequent volumes of practice materials for elementary grade students have been developed. The first of these, Elementary Computation, emphasizes fundamental operations in computation. Representative numerical exercises appear in each lesson. These are followed by verbal presentation of numbers in simple word problems. A considerable portion of the first volume is devoted to introduction to and use of the calculator. This volume can be used with students as early as grade four. The second volume, Elementary Problem Solving, focuses on problem-solving activities. "Criterion" activities from the first volume introduce each lesson. If the student can perform these tasks with ease, he can continue the lesson. If for some reason he has difficulty, he should return to the appropriate section in the first volume for remediation. Representative problems from the mathematics curriculum are included, and a substantial number of the problems are oriented to real life situations.

Although the publications were written as practice materials, the three volumes can be used for a sequential program of basic instruction in general mathematics, and as a mathematics program for vocational students.

The APH is indebted to the authors: Tuck Tinsley III, Florida School for the Blind; Tony Evancic, Philadelphia Public Schools; and Bob Glass, APH Research Assistant, who prepared the manuals. The APH also is appreciative of the efforts of the following teachers who reviewed the materials, used the activities with mainstreamed and residential school mathematics students, and edited final drafts of the manuals prior to publication: Margaret Ritchie, Pasadena Unified Schools; Stephanie Richards, Indiana School for the Blind; and Sue Young, Tennessee School for the Blind. We appreciate the efforts of Diane Anderson, APH, who typed the final draft and prepared the copy for publications.

Frank L. Franks
Project Director

# MEETING THE SPEECH PLUS CALCULATOR

## ON-OFF VOLUME CONTROL

Activity I: The on-off knob is located at the far right corner of the calculator. Find the on-off knob. Turn on the calculator by pulling the on-off knob out. The calculator will say "clear" when you turn it on.

Activity II: If you can hear nothing when you turn on the calculator, increase the volume. Do this by twisting the on-off knob away from you. Try this: twist the on-off knob away from you as far as you can. Now push the knob in and pull it out again. Did you hear a louder "clear?" Now twist the knob toward you to turn down the volume. Again push the knob in and pull it out. Did the volume get softer? Since the on-off knob also controls the volume, it is called the On-Off/Volume Control.

Activity III: There is a raised line on the On-Off/Volume Control. Locate the raised line. Find the volume which you like best and notice the position of the raised line. You can set the raised line at the volume you like best before you turn on the calculator.

## DIGIT KEYS

Activity I: Turn off the calculator. Find the keys on the keyboard. There are three sections of keys. There are two columns of keys in the section at the left, then a space. Find the two columns of keys in the left section. There are three columns of keys in the center section and another space. Find the three columns of keys in the center section. There is one column of keys in the section at the right. Find the column of keys in the right section.

Activity II: The digit keys are in the center section. The far row in the center section contains keys for the digits 1, 2, and 3, from left to right. Try this: turn on the calculator. Press the left key in the far row of the center section. This is the first key in the far row. What did you hear? This is the key for the digit 1. The calculator says the name of the key when you press it. Now press the second key in the far row for the digit 2. Did you hear "two?" Now press the third key in this row for the digit 3.

Activity III: The second row in the center section contains the keys for the digits 4, 5, and 6. Press each of the keys in this row. Feel the key for the digit 5. What is special about this key? The raised dot will always let you know where the 5 Key is located.

The third row in this center section contains the keys for the digits 7, 8, and 9. Press each of these keys.

Activity IV: The near row in the center section also has three keys. Press the first key. When you press this the calculator says "point." You will learn more about this key later. Press the second key in this row for the digit 0. The calculator says "oh" when you press the Zero Key. Press the third key in this row. This key says "times-minus." You will not need to use this key now.

Activity V: The keys for the ten digits 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 are located in the center section of the keyboard. Practice pressing the digit keys and learn where each key is located. Turn off the calculator before going to the next section.

## VISUAL DISPLAY. SPEAK KEY AND CLEAR KEY

Activity I: The long raised section at the far top of the calculator is called the Visual Display. Find the Visual Display. The Visual Display shows each digit as you press the key for that digit.

Activity II: Turn on the calculator. What do you see on the Visual Display? A zero will always appear on the Visual Display when you have not pressed any key. Can you see the zero on the Visual Display? To hear the number which is on the Visual Display, you must press the Speak Key. The Speak Key is the second key in the right column. Press the Speak Key to hear the zero that is on the Visual Display. When you press the Speak Key the calculator always says "point" after the number.

Activity III: Press the 5 Key. You have entered the number 5 into the calculator. We say that you have "keyed in" the number 5. Can you see the 5 that is on the Visual Display? To hear what is on the Visual Display, just press the Speak Key.

Activity IV: Now key in the number 3. Since there was already a 5 in the calculator, a 53 is now on the Visual Display. Press the Speak Key. The calculator says "five, three, point" for fifty-three.

Activity V: To erase the number on the Visual Display, press the Clear Key. The Clear Key is the key in the near left corner. Press the Clear Key to clear the 53 which is on the Visual Display. The Clear Key is the only key on the left column which you will need for the problems in this manual. Press the Speak Key to see if you cleared the 53 from the Visual Display. The calculator will say "oh, point" if you cleared correctly.

Activity VI: Key in 587. Press the Speak Key to hear what you have keyed in. Did you hear "five, eight, seven, point?" Now press the Clear Key to erase the 587 from the Visual Display. Press the Speak Key to see if you cleared correctly.

## SPEAK RATE SWITCH

Activity I: Find the switch which is located on the third key in the right column. This is the Speak Rate Switch. The Speak Rate Switch controls how fast the calculator talks. Key in 237. Pull the Speak Rate Switch toward you and then press the Speak Key. If the switch is pulled toward you and the Speak Key is pressed, the calculator speaks slowly.

Activity II: Push the Speak Rate Switch away from you and press the Speak Key again. When the Speak Rate Switch is pushed away from you and the Speak Key is pressed, the calculator speaks fast.

## OPERATION AND EQUALS KEY

Activity I: The keys for adding, subtracting, multiplying, and dividing are found in the second column of keys in the left section. Find the first key in this column. This is the key for addition. Press this key. You hear "plus."

Activity II: Find the second key in this section. This is the key for subtraction. Press the Subtraction Key. The calculator says "minus."

Activity III: The third key in this column is for multiplication. Press the Multiplication Key. The calculator says "times."

Activity IV: The last key in this column is the Division Key. Press the Division Key. The calculator says "over."

Activity V: The Equals Key is the far key in the right column. Press the Equals Key. The calculator says "equals."

## KEYING IN NUMBERS

Numbers are entered into the calculator by keying in the digits from left to right. Remember to press the Clear Key twice to make sure that the calculator is clear before beginning a problem.

EXAMPLE: Key in 35 and press the Speak Key to hear what you have entered into the calculator.

SOLUTION: /C/ -- /C/ -- /3/ -- /5/ -- /SP/

You Hear: 35

This solution shows that the keys are pressed in the following order: the Clear Key, the Clear Key, the 3 Key, the 5 Key, and the Speak Key.

The Clear Key is pressed twice to clear the calculator.

The 3 Key and the 5 Key are pressed to enter 35. The Speak Key is then pressed to hear what you have keyed in.

EXERCISES: Key in each of the following numbers and use the Speak Key to hear what you keyed in.

8 15 83 127 720 403 2,000

500 9,250 327 5,321 444 8,035

# BASIC ADDITION

To add, use the key that says "plus."

EXAMPLE: 5 + 3 = ___

SOLUTION: /C/ -- /C/ -- /5/ -- /+/ -- /3/ -- /=/ -- /SP/

Answer: 8

Throughout this manual, the above method will be used to show solutions to the examples. In this solution the calculator is cleared, 5 is added to 3, and the Equals Key completes the addition. The Speak Key is used to let you hear the answer.

EXERCISES:

1. 2 + 1 = __

Answer = 3

2. 6 + 3 = __

Answer: 9

3. 4 + 5 = __

Answer: 9

4. $\begin{array}{r} 3 \\ +\ 3 \\ \hline \end{array}$

Answer: 6

5. $\begin{array}{r} 7 \\ +\ 1 \\ \hline \end{array}$

Answer: 8

6. $\begin{array}{r} 1 \\ +\ 5 \\ \hline \end{array}$

Answer: 6

7. $\begin{array}{r} 5 \\ +\ 2 \\ \hline \end{array}$

Answer: 7

8. 4 + 9 = __

Answer: 13

9. 7 + 5 = __

Answer: 12

10. 8 + 0 = __

Answer: 8

11. 9 + 2 = __

Answer: 11

12. $\begin{array}{r} 6 \\ +\ 4 \\ \hline \end{array}$

Answer: 10

13. $\begin{array}{r} 9 \\ +\ 8 \\ \hline \end{array}$

Answer: 17

14. $\begin{array}{r} 4 \\ +\ 7 \\ \hline \end{array}$

Answer: 11

15. $\begin{array}{r} 8 \\ +\ 6 \\ \hline \end{array}$

Answer: 14

## TIME-SAVING HINTS

HINT 1: It is not necessary to use the Clear Key before starting a new problem if the last problem was completed with the Equals Key.

EXAMPLE: 3 + 2 = __      4 + 5 = __

SOLUTION: /C/ -- /C/ -- /3/ -- /+/ -- /2/ -- /=/ -- /SP/

Answer: 5

/4/ -- /+/ -- /5/ -- /=/ -- /SP/

Answer : 9

Notice that you did not need to clear the calculator before beginning 4 + 5 = __.

---

HINT 2: If you make a mistake keying in a number in a problem, just press the Clear Key once and re-enter the correct number.

EXAMPLE: Suppose the problem is 6 + 2 = __ and you key in 6 + 5. When you hear the "5" you know that you have made a mistake. Rather than pressing the Clear Key twice and clearing the entire problem, simply press the Clear Key once to clear the 5. Now key in the 2, press the Equals Key, and you are finished. Press the Speak Key to see if your answer is 8.

# ADVANCED ADDITION

When you add, the answer is called the "sum."

EXAMPLE: 23 + 14 = __

SOLUTION: /23/ -- /+/ -- /14/ -- /=/ -- /SP/

Sum: 37

EXERCISES:

1. 15 + 28 = __
Sum: 43

2. 24 + 57 = __
Sum: 81

3. 56 + 11 = __
Sum: 67

4. 49
+ 93
Sum: 142

5. 36
+ 44
Sum: 80

6. 65
+ 89
Sum: 154

7. 94
+ 73
Sum: 167

8. 60 + 27 = __
Sum: 87

9. 17 + 41 = __
Sum: 58

10. 33 + 70 = ___
Sum: 103

11. 82
+ 35
Sum: 117

12. 20 + 52 = __
Sum: 72

13. 62
+ 84
Sum: 146

14. 39
+ 68
Sum: 107

15. 91
+ 32
Sum: 123

## ADDITION FOR EXPERTS

EXAMPLE: 247 + 83 + 425 = ____

SOLUTION: /247/ -- /+/ -- /83/ -- /+/ -- /425/ -- /=/ -- /SP/

Sum: 755

EXERCISES:

1. 581
+ 93
Sum: 674

2. 327
+ 142
Sum: 469

3. 768
+ 222
Sum: 990

4. 375 + 602 = ____
Sum: 977

5. 837 + 48 = ____
Sum: 885

6. 130 + 254 = ____
Sum: 384

7. 469 + 541 = ____
Sum: 1,010

8. 165 + 36 + 204 = ____
Sum: 405

9. 406
+ 940
Sum: 1,346

10. 159
73
+ 328
Sum: 560

11. 430
654
+ 291
Sum: 1,375

12. 806 + 345 + 211 = ____
Sum: 1,362

13. 925
537
+ 666
Sum: 2,128

14. 358
302
+ 529
Sum: 1,189

15. 730 + 83 + 152 = ____
Sum: 965

EXTRAS FOR EXPERTS:

16. What is the sum of 528 and 362?

Sum: 890

17. Add 51 and 275. What is the sum?

Sum: 326

18. What is 327 plus 826?

Sum: 1,153

19. 680 more than 504 is ____.

Sum: 1,184

20. What is the sum of four hundred twenty-five and one hundred three?

Sum: 528

21. Add one hundred sixty and seven hundred forty.

Sum: 900

22. What is three hundred plus six hundred forty-three?

Sum: 943

## BASIC SUBTRACTION

To subtract, use the key that says "minus."

EXAMPLE: 16 - 9 = ___

SOLUTION: /16/ -- /-/ -- /9/ -- /=/ -- /SP/

Answer: 7

EXERCISES:

1. 11 - 4 = ___

   Answer: 7

2. 10 - 2 = ___

   Answer: 8

3. 8 - 8 = ___

   Answer: 0

4. $\begin{array}{r} 8 \\ -\ 1 \\ \hline \end{array}$

   Answer: 7

5. $\begin{array}{r} 9 \\ -\ 3 \\ \hline \end{array}$

   Answer: 6

6. $\begin{array}{r} 12 \\ -\ 7 \\ \hline \end{array}$

   Answer: 5

7. $\begin{array}{r} 14 \\ -\ 5 \\ \hline \end{array}$

   Answer: 9

8. 15 - 8 = ___

   Answer: 7

9. $\begin{array}{r} 12 \\ -\ 6 \\ \hline \end{array}$

   Answer: 6

10. 10 - 7 = ___

    Answer: 3

11. 17 - 9 = ___

    Answer: 8

12. $\begin{array}{r} 5 \\ -\ 0 \\ \hline \end{array}$

    Answer: 5

13. $\begin{array}{r} 13 \\ -\ 8 \\ \hline \end{array}$

    Answer: 5

14. 17 - 8 = ___

    Answer: 9

15. 10 - 5 = ___

    Answer: 5

## ADVANCED SUBTRACTION

When you subtract, the answer is called the "difference."

EXAMPLE: 52 - 12 = ___

SOLUTION: /52/ -- /-/ -- /12/ -- /=/ -- /SP/

Difference: 40

EXERCISES:

1. 27 - 13 = ___
Difference: 14

2. 61 - 40 = ___
Difference: 21

3. 39 - 15 = ___
Difference: 24

4. 56
- 38
Difference: 18

5. 50
- 42
Difference: 8

6. 64
- 35
Difference: 29

7. 84
- 23
Difference: 61

8. 12 - 11 = ___
Difference: 1

9. 93 - 66 = ___
Difference: 27

10. 78
- 30
Difference: 48

11. 89
- 59
Difference: 30

12. 44
- 37
Difference: 7

13. 95
- 29
Difference: 66

14. 76
- 64
Difference: 12

15. 90
- 56
Difference: 34

## SUBTRACTION FOR EXPERTS

EXAMPLE 1: 532 - 275 = ____

SOLUTION: /532/ -- /-/ -- /275/ -- /=/ -- /SP/

Difference: 257

EXERCISES:

1. 215 - 121 = ____

   Difference: 94

2. 653 - 87 = ____

   Difference: 566

3. 629<br>
   - 243<br>
   Difference: 386

4. 503<br>
   - 365<br>
   Difference: 138

5. 720<br>
   - 583<br>
   Difference: 137

6. 1,365 - 847 = ____

   Difference: 518

7. 1,000<br>
   - 425<br>
   Difference: 575

8. 9,082<br>
   - 6,760<br>
   Difference: 2,322

9. 5,917<br>
   - 4,860<br>
   Difference: 1,057

10. 7,003<br>
    - 4,578<br>
    Difference: 2,425

11. 7,654<br>
    - 805<br>
    Difference: 6,849

12. 4,365 - 3,050 = ____

    Difference: 1,315

EXAMPLE 2: You can subtract to find the "missing addend" in an addition problem. 243 + ____ = 357

SOLUTION: /357/ -- /-/ -- /243/ -- /=/ -- /SP/

Missing Addend: 114

EXERCISES:

1. 170 + ____ = 448

   Missing Addend: 278

2. 4,860<br>
   + ____<br>
   5,917

   Missing Addend: 1,057

3. 3,917 + ____ = 8,697

Missing Addend: 4,780

EXTRAS FOR EXPERTS:

1. What is the difference between 386 and 217?

   Difference: 169

2. Subtract 528 from 821. What is the difference?

   Difference: 293

3. What is 759 minus 384?

   Difference: 375

4. 193 less than 642 is ____.

   Difference: 449

5. What is the difference between two hundred eight and seventy-five?

   Difference: 133

6. What is eight hundred minus eighty?

   Difference: 720

## ADDITION AND SUBTRACTION WITHIN THE SAME PROBLEM

You use both the "Plus" and "Minus" Keys when you need to add and subtract within the same problem.

EXAMPLE: 35 + 15 - 20 = ____

SOLUTION: /35/ -- /+/ -- /15/ -- /-/ -- /20/ -- /=/ -- /SP/

Answer: 30

EXERCISES:

1. 24 + 26 - 18 = ____
   Answer: 32
2. 35 - 12 + 16 = ____
   Answer: 39
3. 58 + 12 - 27 = ____
   Answer: 43
4. 142 + 75 - 93 = ____
   Answer: 124
5. 235 - 76 + 142 = ____
   Answer: 301
6. 72 + 504 - 98 = ____
   Answer: 478
7. 439 - 394 + 82 = ____
   Answer: 127
8. 67 + 100 - 67 = ____
   Answer: 100
9. 8,490 - 7,088 + 2,307 = ____
   Answer: 3,709
10. 536 - 536 + 40 = ____
    Answer: 40
11. 295 + 180 - 77 - 398 = ____
    Answer: 0
12. 620 + 344 - 685 + 211 = ____
    Answer: 490
13. 700 - 300 + 200 - 500 = ____
    Answer: 100
14. 4,028 - 1,890 + 3,546 + 2,901 = ____
    Answer: 8,585

15. 8,994 - 5,173 - 1,438 + 2,000 = ______

Answer: 4,383

EXTRAS FOR EXPERTS:

16. What do you get when you subtract 42 from 97 and then add 31?

Answer: 86

17. What is 29 less than the sum of 68 and 53?

Answer: 92

18. From the sum of 124, 313, and 275, subtract 496.

What is your answer?

Answer: 216

19. Subtract two hundred thirty-seven from five hundred twenty-eight; then add one hundred fifty to this difference. What is your answer?

Answer: 441

20. From the sum of five hundred sixty-two and seventy-six, subtract three hundred ninety-one. What is your answer?

Answer: 247

## BASIC MULTIPLICATION

To multiply, use the key that says "times."

EXAMPLE: 5 x 3 = ___

SOLUTION: /5/ -- /x/ -- /3/ -- /=/ -- /SP/

Answer: 15

EXERCISES:

1. 4 x 2 = ___

Answer: 8

2. 3 x 5 = ___

Answer: 15

3. 6 x 4 = ___

Answer: 24

4. 3 x 6 = ___

Answer: 18

5. $\begin{array}{r} 9 \\ \times\ 2 \\ \hline 18 \end{array}$ Answer: 18

6. $\begin{array}{r} 5 \\ \times\ 4 \\ \hline 20 \end{array}$ Answer: 20

7. $\begin{array}{r} 9 \\ \times\ 9 \\ \hline 81 \end{array}$ Answer: 81

8. $\begin{array}{r} 8 \\ \times\ 0 \\ \hline 0 \end{array}$ Answer: 0

9. 7 x 2 = ___

Answer: 14

10. 7 x 6 = ___

Answer: 42

11. $\begin{array}{r} 8 \\ \times\ 5 \\ \hline 40 \end{array}$ Answer: 40

12. 9 x 3 = ___

Answer: 27

13. $\begin{array}{r} 7 \\ \times\ 8 \\ \hline 56 \end{array}$ Answer: 56

14. $\begin{array}{r} 4 \\ \times\ 1 \\ \hline 4 \end{array}$ Answer: 4

15. $\begin{array}{r} 5 \\ \times\ 5 \\ \hline 25 \end{array}$ Answer: 25

## ADVANCED MULTIPLICATION

When you multiply, the answer is called the "product."

EXAMPLE: 5 x 24 = ____

SOLUTION: /5/ -- /x/ -- /24/ -- /=/ -- /SP/

Product: 120

EXERCISES:

1. 9 x 15 = ____

Product: 135

2. 35 x 8 = ____

Product: 280

3. 2 x 62 = ____

Product: 124

4. $\begin{array}{r} 234 \\ \times\ 8 \\ \hline 1{,}872 \end{array}$

Product: 1,872

5. $\begin{array}{r} 76 \\ \times\ 5 \\ \hline 380 \end{array}$

Product: 380

6. 0 x 29 = ____

Product: 0

7. 53 x 6 = ___

Product: 318

8. 50 x 3 = ____

Product: 150

9. $\begin{array}{r} 300 \\ \times\ 2 \\ \hline 600 \end{array}$

Product: 600

10. $\begin{array}{r} 85 \\ \times\ 4 \\ \hline 340 \end{array}$

Product: 340

11. $\begin{array}{r} 97 \\ \times\ 1 \\ \hline 97 \end{array}$

Product: 97

12. $\begin{array}{r} 48 \\ \times\ 3 \\ \hline 144 \end{array}$

Product: 144

13. $\begin{array}{r} 420 \\ \times\ 7 \\ \hline 2{,}940 \end{array}$

Product: 2,940

14. $\begin{array}{r} 571 \\ \times\ 9 \\ \hline 5{,}139 \end{array}$

Product: 5,139

15. $\begin{array}{r} 145 \\ \times\ 4 \\ \hline 580 \end{array}$

Product: 580

# MULTIPLICATION FOR EXPERTS

EXAMPLE: 12 x 35 = ____

SOLUTION: /12/ -- /x/ -- /35/ -- /=/ -- /SP/

Product: 420

EXERCISES:

1. 13 x 15 = _____
Product: 195

2. 26 x 31 = ____
Product: 806

3. 46
x 21
Product: 966

4. 81
x 59
Product: 4,779

5. 24
x 92
Product: 2,208

6. 54 x 19 = _____
Product: 1,026

7. 83 x 25 = ______
Product: 2,075

8. 178
x 14
Product: 2,492

9. 203
x 57
Product 11,571

10. 66 x 22 = ______
Product: 1,452

11. 85
x 52
Product: 4,420

12. 541
x 70
Product: 37,870

13. 397
x 63
Product: 25,011

14. 400
x 33
Product: 13,200

15. 260
x 48
Product: 12,480

EXTRAS FOR EXPERTS:

16. What is the product of 36 and 29?
Product: 1,044

17. Multiply 54 by 27. What is the product?

    Product: 1,458

18. What is 32 times 71?

    Product: 2,272

19. Find the product of two hundred twenty-four and eighty-five.

    Product: 19,040

20. What answer do you get when you multiply nine hundred six by fifty?

    Product: 45,300

## BASIC DIVISION

To divide, use the key that says "over."

EXAMPLE 1: $8 \div 2 =$ ___

SOLUTION: Since "over" means "divided by," we key in the problem as follows:

/8/ -- /÷/ -- /2/ -- /=/ -- /SP/

Answer: 4

EXERCISES:

1. $6 \div 2 =$ ___

   Answer: 3

2. $10 \div 5 =$ ___

   Answer: 2

3. $24 \div 4 =$ ___

   Answer: 6

4. $12 \div 3 =$ ____

   Answer: 4

5. $35 \div 7 =$ ____

   Answer: 5

EXAMPLE 2: A division problem may be written like this: $3\,\overline{)24}$

SOLUTION: /24/ -- /÷/ -- /3/ -- /=/ -- /SP/

Answer: 8

EXERCISES:

1. $5\,\overline{)30}$

   Answer: 6

2. $9\,\overline{)81}$

   Answer: 9

3. $8\,\overline{)56}$

   Answer: 7

4. $9\,\overline{)45}$

   Answer: 5

5. $6\,\overline{)12}$

   Answer: 2

EXAMPLE 3: You also divide when a problem is written like this: $\frac{15}{5}$

SOLUTION: /15/ -- /÷/ -- /5/ -- /=/ -- /SP/

Answer: 3

EXERCISES:

1. $\frac{21}{3}$

Answer: 7

2. $\frac{48}{6}$

Answer: 8

3. $\frac{32}{8}$

Answer: 4

4. $\frac{9}{1}$

Answer: 9

5. $\frac{40}{4}$

Answer: 10

# ADVANCED DIVISION

When you divide, the answer is called the "quotient."

EXAMPLE 1: 365 ÷ 5 = ____

SOLUTION: /365/ -- /÷/ -- /5/ -- /=/ -- /SP/

Quotient: 73

EXAMPLE 2: $5\,\overline{)365}$

SOLUTION: /365/ -- /÷/ -- /5/ -- /=/ -- /SP/

Quotient: 73

EXAMPLE 3: $\frac{365}{5}$

SOLUTION: /365/ -- /÷/ -- /5/ -- /=/ -- /SP/

Quotient: 73

EXERCISES:

1. 69 ÷ 3 = ____
   Quotient: 23

2. 2,065 ÷ 5 = ____
   Quotient: 413

3. 4,518 ÷ 9 = ____
   Quotient: 502

4. 504 ÷ 6 = ____
   Quotient: 84

5. 716 ÷ 1 = ____
   Quotient: 716

6. $\frac{1,186}{2}$
   Quotient: 593

7. $\frac{420}{7}$
   Quotient: 60

8. $\frac{1,072}{4}$
   Quotient: 268

9. $\frac{136}{8}$
   Quotient: 17

10. $\frac{245}{5}$
    Quotient: 49

11. $8\,\overline{)4{,}016}$

Quotient: 502

12. $4\,\overline{)3{,}396}$

Quotient: 849

13. $3\,\overline{)819}$

Quotient: 273

14. $9\,\overline{)4{,}959}$

Quotient: 551

15. $7\,\overline{)496{,}272}$

Quotient: 70,896

# DIVISION FOR EXPERTS

EXAMPLE: 525 ÷ 7 = ____

SOLUTION: /525/ -- /÷/ -- /7/ -- /=/ -- /SP/

Quotient: 75

EXERCISES:

1. 429 ÷ 39 = ____

Quotient: 11

2. 25 )1,175

Quotient: 47

3. 30 )1,560

Quotient: 52

4. 1,547 ÷ 17 = ___

Quotient: 91

5. 3,528 ÷ 42 = ____

Quotient: 84

6. 1,536 ÷ 96 = ____

Quotient: 16

7. 83 )2,241

Quotient: 27

8. 14 )210

Quotient: 15

9. 46 )2,852

Quotient: 62

10. 65 )2,015

Quotient: 31

11. 12,154 ÷ 59 = ____

Quotient: 206

12. 1,840 ÷ 23 = ____

Quotient: 80

13. 38 )2,812

Quotient: 74

14. 129 )1,677

Quotient: 13

15. 18,656 ÷ 352 = ____

Quoeient: 53

16. What is 903 divided by 21?

Quotient: 43

17. What is the quotient when you divide 2,555 by 73?

Quotient: 35

18. How many twelves are there in 302,076?

    Quotient: 25,173

19. Find the missing factor: 42 x ____ = 1,134

    Missing Factor: 27

20. What is the quotient when you divide one thousand, nine hundred forty-four by thirty-six?

    Quotient: 54

## MULTIPLICATION AND DIVISION WITHIN THE SAME PROBLEM

You use both the "Times" and "Over" Keys when you need to multiply and divide within the same problem.

EXAMPLE: 12 x 3 ÷ 4 = ___

SOLUTION: /12/ -- /x/ -- /3/ -- /÷/ -- /4/ -- /=/ -- /SP/

Answer: 9

EXERCISES:

1. 8 x 9 ÷ 6 = ___

Answer: 12

2. 10 x 7 ÷ 7 = ___

Answer: 10

3. 35 ÷ 7 x 4 = ___

Answer: 20

4. 12 ÷ 1 x 3 = ___

Answer: 36

5. 18 x 25 ÷ 10 = ___

Answer: 45

6. 0 x 326 ÷ 24 = ___

Answer: 0

7. 20 ÷ 2 x 8 = ___

Answer: 80

8. 20 x 4 ÷ 5 = ___

Answer: 16

9. 21 x 15 ÷ 35 = ___

Answer: 9

10. 1,081 ÷ 47 x 62 = _____

Answer: 1,426

11. 86 x 27 ÷ 387 = ___

Answer: 6

12. 52 x 70 ÷ 65 x 93 = _____

Answer: 5,208

13. 1,708 ÷ 61 x 66 ÷ 77 = ___

Answer: 24

14. 4,346 ÷ 53 ÷ 41 x 50 = ___

Answer: 100

15. 48 x 67 x 89 ÷ 286,224 = ___

Answer: 1

EXTRAS FOR EXPERTS:

16. Multiply 99 by 58. Now divide this product by 22.

What is your answer?

Answer: 261

17. Divide the product of 24 and 33 by 88.

What is your answer?

Answer: 9

18. What is 9 times the quotient of 5,478 divided by 83?

Answer: 594

## KEYING IN DECIMALS

You use the Decimal Key to key in decimal numbers.

The Decimal Key says "point."

EXAMPLE 1: Key in 5.72 and press the Speak Key to hear what you keyed in.

SOLUTION: /5/ -- /·/ -- /7/ -- /2/ -- /SP/

Answer: 5.72

EXAMPLE 2: Key in .346 and press the Speak Key to hear what you keyed in.

SOLUTION: /·/ -- /3/ -- /4/ -- /6/ -- /SP/

Answer: 0.346

Notice that the calculator places a zero before each decimal number which is smaller than 1.

EXERCISES: Key in each of these decimal numbers and use the Speak Key to check what you keyed in.

| | | | | | |
|---|---|---|---|---|---|
| 1. | 74.4 | 2. | 4.65 | 3. | 3.29 |
| 4. | .971 | 5. | 81.3 | 6. | .0298 |
| 7. | 960.7 | 8. | 3.121 | 9. | 174.85 |
| 10. | 60.257 | 11. | 3.8730 | 12. | 5.2604 |
| 13. | 40.16 | 14. | 99.999 | 15. | 123.456 |

EXTRAS FOR EXPERTS: Key in the following numbers and use the Speak Key to check what you keyed in.

16. Twenty-nine and three-tenths

Answer: 29.3

17. Fifty and seventy-two hundredths

    Answer: 50.72

18. Two hundred four and thirty-six thousandths

    Answer: 204.036

## ADDITION AND SUBTRACTION OF DECIMALS

EXAMPLE: 26.3 - 15.48 = ___

SOLUTION: /2/ -- /6/ -- /·/ -- /3/ -- /-/ -- /1/ -- /5/ -- /·/ -- /4/ -- /8/ -- /=/ -- /SP/

Difference: 10.82

EXERCISES:

1. 121.5 - 42.673 = ______

Difference: 78.827

2. 2.7 + .35 = ______

Sum: 3.05

3. 16 - 2.56 = ______

Difference: 13.44

4.
```
            .6381
          - .406
Difference: 0.2321
```

5.
```
      11.764
       2.306
    + 61.93
Sum:  76.
```

6.
```
            5.0003
          - 4.97
Difference: 0.0303
```

7. 13 + .46 = ______

Sum: 13.46

8. 23.111 - .111 = ______

Difference: 23

9. 40.83 - 40.8 = ______

Difference: 0.03

10. 152.3 + 61.79 = ______

Sum: 214.09

11. 1.4 + 3.6 = ______

Sum: 5

12. 5.87 + 3.2 + 9.036 = ______

Sum: 18.106

13. 12.4 + 6.3 = ______

Sum: 18.7

14. 29.37 + 11.852 - 30.427 = ______

Answer: 10.795

15. 4.83 - 2.01 + 12.6 - 8.754 = ______

Answer: 6.666

## MULTIPLICATION AND DIVISION OF DECIMALS

EXAMPLE 1: 3.4 x 85.6 = _____

SOLUTION: /3/ -- /·/ -- /4/ -- /x/ -- /8/ -- /5/ -- /·/ -- /6/ -- /=/ -- /SP/

Product: 291.04

EXAMPLE 2: 7.31 ÷ .34 = _____

SOLUTION: /7/ -- /·/ -- /3/ -- /1/ -- /÷/ -- /·/ -- /3/ -- /4/ -- /=/ -- /SP/

Quotient: 21.5

EXERCISES:

1. .3 x 6.75 = ______

   Product: 2.025

2. .2 x .4 = _____

   Product: 0.08

3. 3.551 ÷ .67 = _____

   Quotient: 5.3

4. .6 )1.2

   Quotient: 2

5. 4.66 )28.9386

   Quotient: 6.21

6. 
```
 .007
x 2.5
```

   Product: 0.0175

7. 
```
 3.61
x .20
```

   Product: 0.722

8. 97.97 x 2.48 = _________

   Product: 242.9656

9. 35.7057 ÷ 8.73 = _____

   Quotient: 4.09

10. 501.7 x 6.03 = _________

    Product: 3,025.251

11. 500 x .002 = _____

    Product: 1

12. 1.6872 ÷ .37 = ______

    Quotient: 4.56

13. 297.5 ÷ 23.8 x 3.604 = ______

    Answer: 45.05

14. 1.48 x 3.627 ÷ 5.36796 = __

    Answer: 1

15. .147852 ÷ .333 = ______

Quotient: 0.444

## MONEY

The Decimal Key is very useful when dealing with money. Remember to use the Decimal Key when there is a $ sign or a ¢ sign on a problem.

EXAMPLE: 78¢ + 54¢ = _____

SOLUTION: Always use the Decimal Key when keying in money.

/·/ -- /7/ -- /8/ -- /+/ -- /·/ -- /5/ -- /4/ -- /=/ -- /SP/

Sum: $1.32

EXERCISES:

1. 25¢ + 38¢ + 52¢ = ______
   Sum: $1.15

2. $1.23 + $2.50 = ______
   Sum: $3.73

3. $5.00 - $3.25 = _____
   Difference: $1.75

4. 3 x $1.20 = _____
   Product: $3.60

5. 5 x 35¢ = ______
   Product: $1.75

6. 4 )$7.60
   Quotient: $1.90

7. $5.26 ÷ 2 = _____
   Quotient: $2.63

8. $4.86
   6.91
   + 3.09
   Sum: $14.86

9. $2.99
   x 5
   Product: $14.95

10. $13.00
    - 9.75
    Difference: $ 3.25

11. $9.50
    - 4.82
    Difference: $4.68

12. $.63 )$7.56
    Quotient: 12.

13. $8.49 + $.62 + $4.85 + $7.11 = ______
    Sum: $21.07

14. $10.00
- 6.79
Difference: $ 3.21

15. $1.99
x 4
Product: $7.96

EXTRAS FOR EXPERTS:

16. What is five dollars minus $3.18?

Difference: $1.82

17. What is the sum of $5.10, $4.77, and $2.69?

Sum: $12.56

18. What is three times six dollars and seventy-five cents?

Product: $20.25

## CHANGING FRACTIONS TO DECIMALS

It is very easy to use the calculator to change fractions to decimals.

EXAMPLE 1: Change 1/4 to a decimal.

SOLUTION: Since 1/4 means 1 ÷ 4,

/1/ -- /÷/ -- /4/ -- /=/ -- /SP/

Answer: 0.25

EXERCISES: Change each of the following fractions to a decimal.

1. 1/2

Answer: 0.5

2. 3/4

Answer: 0.75

3. 1/5

Answer: 0.2

4. 7/5

Answer: 1.4

5. 3/8

Answer: 0.375

6. 9/8

Answer: 1.125

7. 7/10

Answer: 0.7

8. 5/16

Answer: 0.3125

9. 1/20

Answer: 0.05

10. 17/20

Answer: 0.85

11. 12/24

Answer: 0.5

12. 4/25

Answer: 0.16

13. 11/40

Answer: 0.275

14. 39/50

Answer: 0.78

15. 287/1,000

Answer: 0.287

## CHANGING MIXED NUMBERS TO DECIMALS

You can also use the calculator to change mixed numbers to decimals.

EXAMPLE 1: Change 2 3/5 to a decimal.

SOLUTION: /3/ -- /÷/ -- /5/ -- /+/ -- /2/ -- /=/ -- /SP/

Answer: 2.6

Notice that you first change the fraction to a decimal, and then you add the whole number.

EXAMPLE 2: Change 16 3/4 to a decimal.

SOLUTION: /3/ -- /÷/ -- /4/ -- /+/ -- /16/ -- /=/ -- /SP/

Answer: 16.75

EXERCISES: Change each of the following mixed numbers to a decimal.

1. 3 1/2

Answer: 3.5

2. 7 1/4

Answer: 7.25

3. 2 3/5

Answer: 2.6

4. 1 7/8

Answer: 1.875

5. 6 9/10

Answer: 6.9

6. 9 5/16

Answer: 9.3125

7. 4 15/16

Answer: 4.9375

8. 42 13/20

Answer: 42.65

9. 8 24/25

Answer: 8.96

10. 13 27/40

Answer: 13.675

11. 5 1/32

Answer: 5.03125

12. 11 5/32

Answer: 11.15625

13. 10 41/50

Answer: 10.82

14. 2 47/100

Answer: 2.47

15. 278 543/1,000

Answer: 278.543

## COMMUTATIVE PROPERTY OF ADDITION

When you add one number to a second number, you get the same sum as when you add the second number to the first.

EXAMPLE: Is "4 + 5" equal to "5 + 4?"

SOLUTION: /4/ -- /+/ -- /5/ -- /=/ -- /SP/    /5/ -- /+/ -- /4/ -- /=/ -- /SP/

Sum: 9    Sum: 9

Since both sums are 9, "4 + 5" equals "5 + 4."

EXERCISES: Check to see if the sums are equal in each of the following pairs of addition problems.

1. 21 + 9
   9 + 21
   Answer: Yes

2. 32 + 15
   15 + 35
   Answer: No

3. 60 + 47
   47 + 60
   Answer: Yes

4. 387 + 0
   0 + 387
   Answer: Yes

5. 183 + 97
   97 + 183
   Answer: Yes

6. 204 + 360
   360 + 240
   Answer: No

7. 5.7 + 28
   2.8 + 57
   Answer: No

8. 135 + 408
   408 + 135
   Answer: Yes

9. 22.3 + .086

.086 + 22.3

Answer: Yes

10. 12.06 + 1

1 + 12.06

Answer: Yes

11. 100 + 58.9

58.9 + 100

Answer: Yes

12. 94 + 8.36

8.36 + 94

Answer: Yes

13. .95 + 2.247

2.247 + .95

Answer: Yes

14. 798.5 + 665.3

665.3 + 798.5

Answer: Yes

15. 90.64 + 65.01

65.01 + 90.64

Answer: Yes

## COMMUTATIVE PROPERTY OF MULTIPLICATION

When you multiply one number by a second number, you get the same product as when you multiply the second number by the first.

EXAMPLE: Is "5 x 9" equal to "9 x 5?"

SOLUTION: /5/ -- /x/ -- /9/ -- /=/ -- /SP/     /9/ -- /x/ -- /5/ -- /=/ -- /SP/

Product: 45     Product: 45

Since both products are 45, "5 x 9" equals "9 x 5."

EXERCISES: Check to see if the products are equal in each of the following pairs of multiplication problems.

1. 7 x 12
12 x 7
Answer: Yes

2. 8 x 9
9 x 5
Answer: No

3. 11 x 35
35 x 11
Answer: Yes

4. 24 x 35
34 x 25
Answer: No.

5. 60 x 25
20 x 65
Answer: No

6. 30 x 71
71 x 30
Answer: Yes

7. 8 x 5.6
5.6 x 8
Answer: Yes

8. 1.5 x 6.7
.67 x 1.5
Answer: No

9. 21.4 x 3.8
3.8 x 21.4
Answer: Yes

10. 4.9 x 0
0 x 4.9
Answer: Yes

11. 6.6 x 4.4
4.4 x 6.6
Answer: Yes

12. 270 x .9
.9 x 270
Answer: Yes

13. 3.75 x 1
1 x 3.75
Answer: Yes

14. 96.09 x 54.3
54.3 x 96.09
Answer: Yes

15. 8.87 x 499
499 x 8.87
Answer: Yes

## ADDITIVE PROPERTY OF ZERO

When you add zero (0) to any number, the number remains unchanged.

EXAMPLE: 15 + 0 = ____

SOLUTION: /15/ -- /+/ -- /0/ -- /=/ -- /SP/

Sum: 15

EXERCISES:

1. 23 + 0 = ____

   Sum: 23

2. 19 + 0 = ____

   Sum: 19

3. 0 + 46 = ____

   Sum: 46

4. 50 + 0 = ____

   Sum: 50

5. 0 + 9.1 = ____

   Sum: 9.1

6. 0 + .84 = ____

   Sum: 0.84

7. 72 + 0 = ____

   Sum: 72

8. .037 + 0 = ______

   Sum: 0.037

9. 0 + 420 = ____

   Sum: 420

10. 83.4 + 0 = ____

    Sum: 83.4

11. 0 + 74.96 = ______

    Sum: 74.96

12. 0 + 3.55 = ______

    Sum: 3.55

13. 66.11 + 0 = ______

    Sum: 66.11

14. 0 + 9.978 = ______

    Sum: 9.978

15. 123.456 + 0 = _______

    Sum: 123.456

## MULTIPLICATIVE PROPERTY OF ONE

When you multiply any number by one (1), the number remains unchanged.

EXAMPLE: 1 x 23 = _____

SOLUTION: /1/ -- /x/ -- /23/ -- /=/ -- /SP/

Product: 23

EXERCISES:

1. 1 x 13 = ___

   Product: 13

2. 1 x 26 = ___

   Product: 26

3. 32 x 1 = ___

   Product: 32

4. 1 x 39 = ___

   Product: 39

5. 40 x 1 = ___

   Product: 40

6. 1 x 5.4 = ___

   Product: 5.4

7. 2.57 x 1 = ___

   Product: 2.57

8. 562 x 1 = ___

   Product: 562

9. 1 x 36.5 = ___

   Product: 36.5

10. 1 x .073 = ___

    Product: .073

11. 4.379 x 1 = ______

    Product: 4.379

12. 1 x .008 = _____

    Product: 0.008

13. 78.1 x 1 = _____

    Product: 78.1

14. 1 x 690.2 = _____

    Product: 690.2

15. 1 x 123.456 = _______

    Product: 123.456

## MULTIPLICATIVE PROPERTY OF ZERO

The product of any number and zero is zero.

EXAMPLE: 13 x 0 = _____

SOLUTION: /13/ -- /x/ -- /0/ -- /=/ -- /SP/

Product: 0

EXERCISES:

1. 0 x 7 = ___

   Product: 0

2. 0 x 15 = ____

   Product: 0

3. 24 x 0 = ___

   Product: 0

4. 0 x 38 = ___

   Product: 0

5. 5.1 x 0 = ___

   Product: 0

6. 96.6 x 0 = ___

   Product: 0

7. .74 x 0 = ___

   Product: 0

8. 0 x 395 = ___

   Product: 0

9. 0 x 21.7 = ___

   Product: 0

10. .829 x 0 = ___

    Product: 0

11. 0 x 64.5 = ___

    Product: 0

12. 64.5 x 0 = ___

    Product: 0

13. .67 x 0 = ___

    Product: 0

14. 0 x 1.92 = ___

    Product: 0

15. 0 x 123.456 = ___

    Product: 0